

# **COST APPROACH**

AUGUST 17, 2017

During the Session

Type "?" in Chat for a Question

Type "&" to go back a slide

Type "#" to see the math

**Please mute phone systems to limit background noise**

# Our Objectives



- 1. Explain and define the cost approach to appraisal
- 2. Understand the differences between replacement cost and reproduction cost and when they should be used
- 3. Discuss the theories of substitution and contribution
- 4. Understand the whys and hows of the cost approach

# TERMS

**Cost Approach-** estimates the value of real estate by calculating the cost of replacing or reproducing a structure on the land, minus depreciation, plus site value. Value derived may not equal market value.

**Reproduction Cost-** the estimated cost to construct, as of the effective appraisal date, an **exact replica** of the building being appraised, insofar as possible using the same materials, construction standards, design, layout, and quality of workmanship, including all the deficiencies, super-adequacies, and obsolescence of the subject building.

**Replacement Cost-** the estimated cost to construct, as of the effective appraisal date, a building with equal utility to the building being appraised, using modern materials, building standards, design, and layout.

**Historical Cost-** The actual cost of constructing an improvement, at the time it was built



# REPRODUCTION VS REPLACEMENT

Reproduction cost = exact replica



# REPRODUCTION VS REPLACEMENT

Replacement cost = similar utility



*Note: Replacement cost is what is used in NV for tax purposes*




# TERMS

**Law of Increasing Return-** Larger and larger investments in structures and improvements will produce larger and larger net return up to a certain point

**Law of Diminishing/Decreasing Return-** Once the net return reaches its maximum, additional investment will not produce a proportionate return of the investment

**Principle of Substitution-** Most associated with the Cost Approach, a rational, informed buyer will pay no more for a property than the cost of building an acceptable substitute.

**Principle of Contribution-** The value of a component is measured in terms of its contribution to the value of the whole. The property components must be in proper proportion if optimum value is to be achieved or sustained. An improper balance may result in an under-improvement or an over-improvement. Cost does not necessarily equal value.



# PRINCIPLE OF SUBSTITUTION

If a buyer can purchase a 2015 4BR/2BA house with a view near Lake Tahoe for \$700,000, why would they pay \$1,000,000 for a similar house in the same neighborhood with the same view?

OR

Why would a renter pay \$1100/month for a 2BR/2BA house when they could rent a similar house right down the street for \$850/month?



This is the Principle of Substitution

\$\$ = \$\$



# Principle of Contribution

## Law of Increasing Return

- Pool in apartment complex in Las Vegas
- ½ bath on first floor of 2 story home
- Garage replacing carport
- Tape & texture replacing popcorn ceiling
- Update kitchen or bath
- Replace worn carpet
- Paint
- Inside laundry

Find the Balance

## Law of Diminishing/ Decreasing Return

Over-improvement

- Large laundry building in apartment complex with w/d hookups in units
- High end remodel in a low end neighborhood
- Converting garage into living space when parking is limited (San Francisco)
- Adding a 2<sup>nd</sup> story in a 1 story neighborhood (over building for area/ non conformity)
- Outdoor pool in an area with mostly cold weather

## Under-improvement

- When something is constructed that does not take full advantage of what is allowed...  
Duplex when zoned for quad-plex
- Flipping a property and cleaning worn out carpet instead of replacing it
- A home with absolutely no landscaping





# STEPS IN THE COST APPROACH

$$\begin{aligned} &\text{Site Value} \\ &+ \text{Replacement/Reproduction Cost} \\ &\quad \text{New} \\ &- \text{Depreciation} \\ &= \text{Value} \end{aligned}$$



1. Estimate the value of the land, as if the property were vacant, **considering its current use (NRS 361.227)** or highest and best use (appraisal theory)
2. Estimate Replacement Cost New (**NRS 361.227**) or Reproduction Cost New of the improvements
3. Estimate the amount of accrued depreciation and obsolescence\*
4. Subtract estimated depreciation/obsolescence from estimated Improvements
5. Add the value of the land



<https://www.surveymonkey.com/r/WF8G9VT>

# **METHODS OF VALUING IMPROVEMENTS**

Quantity Survey Method

Unit-In-Place Method

Square Foot Method

Cost Index Method (Factored Historical)



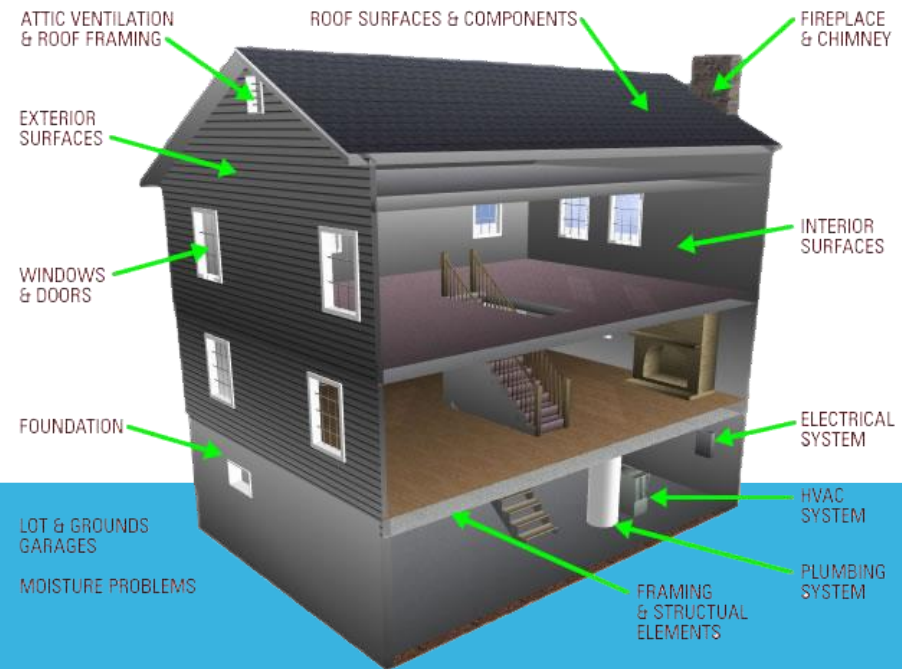
# QUANTITY SURVEY METHOD

- Counts the number and type of each part and material that were used to construct a building
- Calculates using a complete itemization of direct and indirect costs
- Every nail, every board, everything is counted
- Used by builders and contractors
- Most Accurate and most detailed of the 4 methods, most difficult without advanced construction knowledge




# UNIT-IN-PLACE METHOD

- Direct and indirect costs by building **component**
- Estimates the cost of reproducing a building by taking the unit cost of each component part of the structure, and adding all of unit costs together.
- Uses components like the roof, foundation, walls, etc.
- 2nd most accurate method
- Segregated cost section in Marshall & Swift



# SQUARE FOOT METHOD

- Cost method that uses cost data available from cost services or in cost manuals
  - Multiplies area by a value from an authority source, such as Marshall and Swift.
  - **Best method for mass appraisal**
  - Also known as Cubic Foot Method and Comparative Unit Method
- 

# **COST INDEX METHOD (FACTORED HISTORICAL)**

- Estimates building cost by multiplying its original cost by an index factor based on when it was built.
- Least accurate method and many opportunities for error.
- Factored historical costs results in a reproduction cost of the improvements.



# **COST INDEX METHOD CONT'D (FACTORED HISTORICAL)**

- Uses a factor or multiplier applied against historical costs to estimate RCN
- Calculation:

Current index / prior index = multiplier

Multiplier \* historical cost = RCN





# **COST INDEX METHOD CONT'D (FACTORED HISTORICAL)**

- Example: House built 20 years ago for \$80,000  
Cost index when house was built was 1.10  
Current cost index is 1.40  
What is the RCN?

- Calculation:

Current index / prior index = multiplier

Multiplier \* historical cost = RCN

Multiplier:  $1.40 / 1.10 = 1.27$

RCN:  $1.27 * \$80,000 = \$101,600$



## QUIZ ~ COST INDEX METHOD (FACTORED HISTORICAL COST)

Using the following cost indices, answer the following questions:

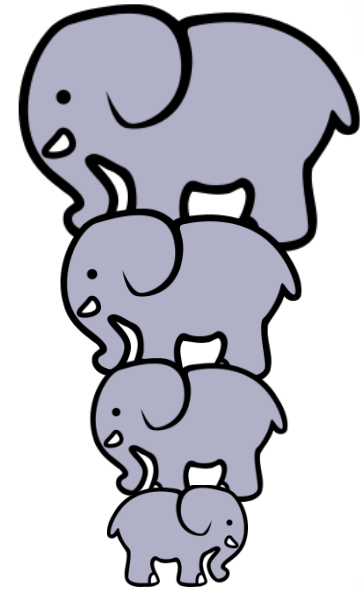
1. If the house was built 30 years ago for \$55,000, what is the indicated cost 5 years ago?  $1.45 / 1.10 = 1.32 * 55,000 = 72,600$
2. The house has a current cost of \$140,000, what would have been its cost 20 years ago?  $1.50 / 1.28 = 1.17 \quad 140,000 / 1.17 = 119,658$
3. A house was built 10 years ago for \$95,000, what is its RCN now?  $1.50 / 1.40 = 1.07 * 95,000 = 101,650$
4. The house was built 20 years ago, what percent did it increase over the next 10 years?  $1.40 - 1.28 = .12$  or 12%
5. What is a factor? **A Multiplier**
6. How do you get a factor? **Divide: Now / Then = Factor or Multiplier**

Years	Index
30	1.10
25	1.12
20	1.28
15	1.30
10	1.40
5	1.45
Current	1.50

# **4 Methods of the Cost Approach**

## **Most to least accurate**

**Quantity Survey Method**  
**Unit-In-Place Method**  
**Square Foot Method**  
**Cost Index Method (Factored  
Historical)**



# **BUILDING COSTS**

There are 2 types of costs associated with building

**Direct (Hard) Costs-** Costs in a project that are not variable, such as labor, materials and profit.

**Indirect (Soft) Costs-** Variable costs, all costs other than labor, materials and profit. Costs not associated with the direct building of the project



# DIRECT (HARD) COSTS

- Building permits
- Materials, products, and equipment
- Labor used in construction
- Equipment used in construction
- Security during construction
- Temporary storage, security, buildings and fencing
- Power line installation and utility costs
- Contractor's profit and overhead



<https://youtu.be/cR-bVx2Tnns>

# INDIRECT (SOFT) COSTS

- Architectural and engineering fees
- Surveys and environmental studies
- Appraisal, consulting, accounting, and legal fees
- Carrying costs (points or service charges, interest on construction loans)
- Insurance expenses
- Property taxes



**Construction  
Insurance**

# Cost Data

Cost data may be obtained from many different places

- Construction contracts or builders costs
- Building contracts
- Published building cost surveys
- Published or computer-assisted cost estimating services
- Real world information obtained from sources specific to the cost type

## IN NEVADA...

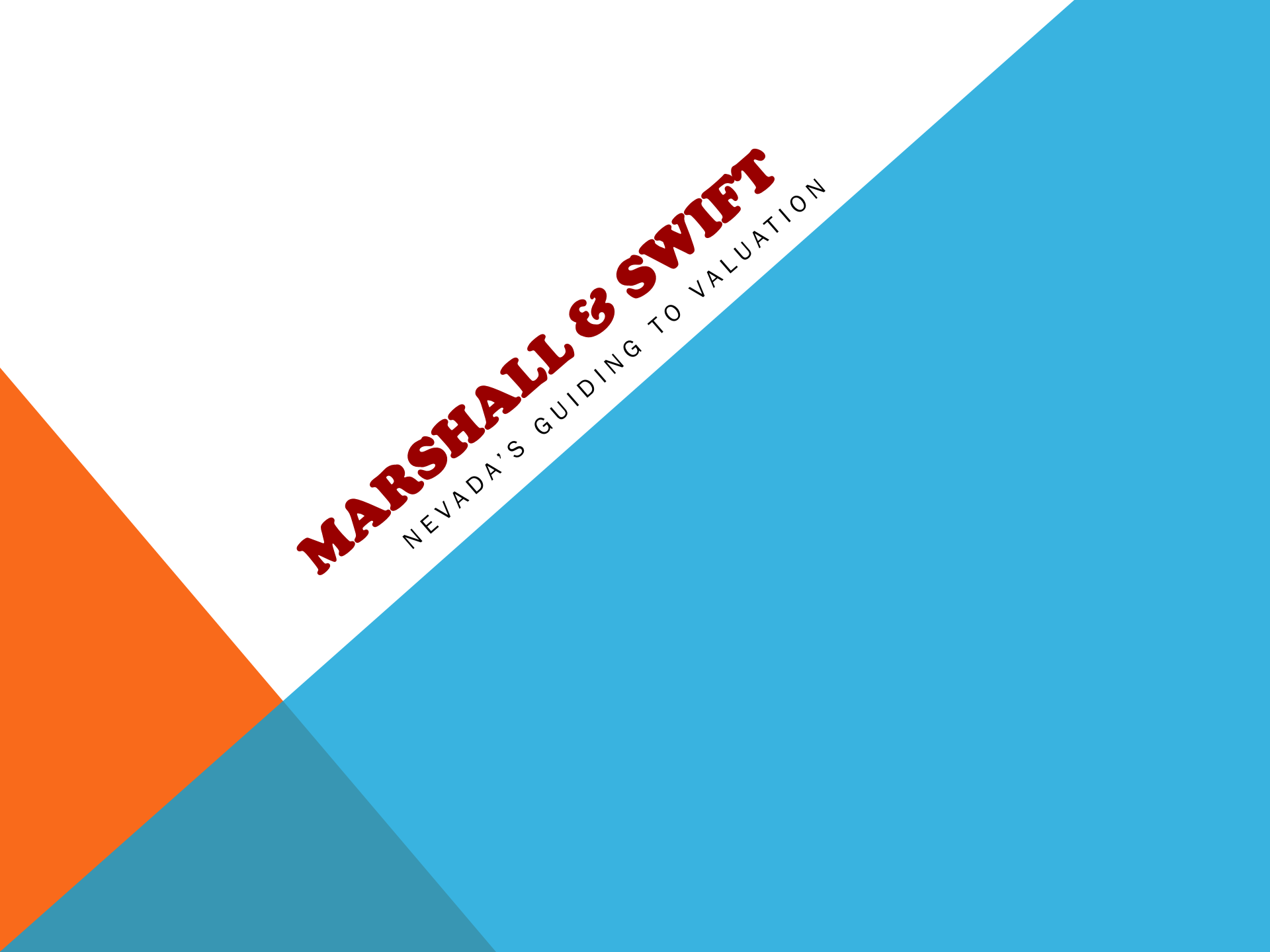
NAC 361.128 Dictates that the calculation of cost of replacement is to be done using Marshall and Swift Costing Manuals or the Manual of rural building costs or if no cost is available, submit for approval from the Executive Director for use of an alternative cost

# ITS THAT TIME AGAIN!!



<https://www.surveymonkey.com/r/3YXZ9L5>



The background of the slide is composed of three geometric shapes: a white triangle in the top-left, an orange triangle in the bottom-left, and a large blue triangle in the bottom-right. The company name and tagline are positioned within the white triangle.

# **MARSHALL & SWIFT**

NEVADA'S GUIDING TO VALUATION

# PROPERTY BUILDING TYPES

- **Residential**  
Single-family, apartments, condos, etc.
- **Commercial**  
Stores, supermarkets, financial institutions, office buildings, hospitals, restaurants, theaters, hotels/motels, churches, funeral homes. etc.
- **Industrial**  
Warehouses, light industrial buildings, heavy industrial buildings
- **Rural**  
Barns, farms, silos, etc.



# **THE FIVE PRINCIPAL CHARACTERISTICS THAT INFLUENCE COST**

**Buildings are “broken down” for analysis and classified by type; similar types usually have similar costs per unit.**

- Design type
- Construction type
  - Quality class
    - Floor area
- Building shape



<https://www.surveymonkey.com/r/NXQ7MJT>

# CALCULATOR METHOD

SECTION 15 PAGE 17  
November 2015

## OFFICE BUILDINGS (344)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	Sq. M.	COST Cu. Ft.	Sq. Ft.
<b>A</b>	Excellent	Best metal or stone, brick or block backup, solar glass	Plaster, best veneers, vinyl wall coverings, vinyl, terrazzo, carpet	*Luminous ceilings, many outlets, many private restrooms	Hot and chilled water (zoned)	\$2,842.13	\$22.00	\$264.04
	Good	Good metal and solar glass, face brick, precast concrete panels	Drywall or plaster, some wall cover, acoustic tile, vinyl tile, carpet	*Good fluorescent, high intensity lighting, good restrooms	Hot and chilled water (zoned)	2,250.86	17.43	209.11
	Average	Brick, concrete or metal and glass panels, little trim	Average partitions, acoustic tile, vinyl composition, some extras	*Average intensity fluorescent lighting, average restrooms	Warm and cool air (zoned)	1,696.19	13.13	157.58
	Low cost	Minimum-cost walls and fenestration, little trim	Drywall, acoustic ceilings, asphalt tile, few partitions	*Minimum office lighting and plumbing	Warm and cool air (zoned)	1,351.53	10.46	125.56
<b>B</b>	Excellent	Best metal or stone, brick or block backup, tinted glass	Plaster, best veneers, vinyl wall coverings, vinyl tile, terrazzo	*Luminous ceilings, many outlets, many private restrooms	Hot and chilled water (zoned)	2,762.15	21.38	256.61
	Good	Good metal and solar glass, face brick, precast concrete panels	Drywall/plaster, some wall cover, acoustic tile, vinyl tile, carpet	*Good fluorescent, high intensity lighting, good restrooms	Hot and chilled water (zoned)	2,173.79	16.83	201.95
	Average	Brick, concrete or metal and glass panels, little trim	Average partitions, acoustic tile, vinyl composition, some extras	*Average intensity fluorescent lighting, average restrooms	Warm and cool air (zoned)	1,624.93	12.58	150.96
	Low cost	Minimum-cost walls and fenestration, little trim	Drywall, acoustic ceilings, asphalt tile, few partitions	*Minimum office lighting and plumbing	Warm and cool air (zoned)	1,287.37	9.97	119.60
<b>C</b>	Excellent	Steel frame, masonry and glass, stone ornamentation, top quality	Plaster, paneling, carpet and terrazzo, suspended ceilings	*Best fluorescent ceiling panels, tiled restrooms, good fixtures	Warm and cool air (zoned)	2,372.06	18.36	220.37
	Good	Steel frame or bearing walls, brick/conc. panels, some ornamentation	Plaster or drywall, good partitions, acoustic tile, carpet and vinyl	*Good fluorescent lighting, good restrooms and fixtures	Package A.C.	1,657.98	12.84	154.03
	Average	Steel or concrete frame, or bearing walls, some trim	Paint, drywall partitions, acoustic tile, vinyl composition	*Fluorescent lighting, adequate outlets and plumbing	Forced air	1,176.07	9.11	109.26
	Low cost	Masonry bearing walls, light rafters, very plain	Paint, few low-cost partitions, acoustic tile, asphalt tile	Minimum office lighting and plumbing	Wall furnace	793.20	6.14	73.69
<b>D</b>	Excellent	Studs or steel columns, bar or web joists, brick or stone veneer, EIFS	Best plaster, paneling, carpet and vinyl tile	*Fluorescent panels, many outlets, good tiled restrooms	Warm and cool air (zoned)	2,254.74	17.46	209.47
	Good	Best stucco on good frame, brick or stone trim, good front	Plaster or drywall, good partitions, acoustic tile, carpet and vinyl	*Good fluorescent lighting, good restrooms and fixtures	Package A.C.	1,571.33	12.17	145.98
	Average	Stucco or wood siding on wood or steel studs, some trim	Drywall, acoustic tile, low-cost carpet or vinyl composition	*Adequate lighting and plumbing	Forced air	1,112.03	8.61	103.31
	Low cost	Light stucco or siding on wood or steel studs, very plain	Drywall, few partitions, acoustic tile, asphalt tile	Minimum lighting and plumbing	Wall furnace	745.84	5.77	69.29
<b>D POLE</b>	Good	Good metal panels, fenestration, some brick or stone trim	Plaster or drywall, good partitions, acoustic tile, carpet and vinyl	*Good fluorescent lighting, good restrooms and fixtures	Package A.C.	1,442.81	11.17	134.04
	Average	Pole frame, insulated metal panels, some ornamentation	Drywall, acoustic tile, low-cost carpet or vinyl composition	Adequate lighting and plumbing	Forced air	986.84	7.64	91.68
	Low cost	Pole frame, finished interior, some insulation	Drywall, few partitions, acoustic tile, asphalt tile	Minimum lighting and plumbing	Wall furnace	666.51	5.16	61.92
<b>S</b>	Good	Good sandwich panels and fenestration, some brick or stone	Plaster or drywall, good partitions, acoustic tile, carpet and vinyl	*Good fluorescent lighting, good restrooms and fixtures	Package A.C.	1,474.24	11.41	136.96
	Average	Insulated wall or sandwich panels, adequate fenestration	Drywall, acoustic tile, low-cost carpet or vinyl composition	Adequate lighting and plumbing	Forced air	1,012.03	7.84	94.02
	Low cost	Steel or aluminum on light frame, finished interior, some insulation	Drywall, few partitions, acoustic tile, asphalt tile	Minimum lighting and plumbing	Wall furnace	685.88	5.31	63.72

**MULTISTORY BUILDINGS** – Add .5% (1/2%) for each story, over three, above ground, to all base costs, including basements but excluding mezzanines, up to 30 stories; over 30 add .4% (4/10%) for each additional story.

**SPRINKLERS** – Systems are not included. Costs should be added from Page 37.

**BALCONIES** – Exterior balconies see Page 37, or they may be computed from the Segregated Costs.

**CANOPIES** – For large entrance marquees or carport canopies, see Page 37.

**\*ELEVATORS** – Base costs of buildings marked with an asterisk (\*) include elevator costs. If the subject building has no elevators, deduct the following from the base costs for buildings on this page. See Notes on Page 19.

Classes A & B	Excellent	Sq. M.	Sq. Ft.	Average	Sq. M.	Sq. Ft.
	Good	\$127.02	\$11.80		\$59.42	\$5.52
		86.87	8.07	Low cost	40.69	3.78
Classes C/D/S	Excellent	\$64.26	\$5.97	Average	\$23.25	\$2.16
	Good	38.75	3.60			

## CLASS OF CONSTRUCTION

The Class of Construction is the basic subdivision in the *Marshall Valuation Service*, dividing all buildings into five basic cost groups by type of framing (supporting columns and beams), walls, floors and roof structures, and fireproofing.

**Class A** buildings have fireproofed structural steel frames with reinforced concrete or masonry floors and roofs.

**Class B** buildings have reinforced concrete frames and concrete or masonry floors and roofs.

**Class C** buildings have masonry or concrete exterior walls, and wood or steel roof and floor structures, except for concrete slab on grade.

**Class D** buildings generally have wood frame, floor, and roof structure. They may have a concrete floor on grade and other substitute materials, but are considered combustible construction. This class includes the pre-engineered pole- or post-frame, hoop and arch-rib-frame buildings.

**Class S** buildings have frames, roofs, and walls of incombustible metal. This class includes the pre-engineered metal buildings, including slant-wall and quonset structures.

In each class, there will be variations, combinations, and subclasses, but for purposes of pricing, the major elements of the building should be considered in selecting costs from the tables. Thus, if a building, which is otherwise in Class B, has a wood or steel truss roof, the costs for the Class B building may still be representative, or a Class C building may have concrete plank floors. Interpolations may be made if the appraiser feels the building overlaps two classes sufficiently or the Segregated Cost Sections may be used to modify the cost.

In most localities, some buildings are built which are hybrids in construction, such as those with complete Class A framing, including columns and girders, but with wood floor joists and sheathing. In all such hybrids, the appraiser must judge whether to adjust the costs or interpolate between classes and qualities.

Further details and sketches of the various construction types will be found on pages 5 through 9 of this section, as well as in Section 51, which has definitions and sketches of framing types. Building code and ISO Construction Classifications are referenced on pages 5 through 9. Those indicated are the classification before considering any adjustments for construction deficiencies or insurance rating purposes. For example, a building of Class 6 construction that is rated as Class 1 because of extensive insulation, not listed by UL, would still be valued as a Class 6 building.

### CLASS OF CONSTRUCTION INDICATORS

CLASS	FRAME	FLOOR	ROOF	WALLS
<b>A</b>	Structural steel columns and beams, fireproofed with masonry, concrete, plaster, or other noncombustible material.	Concrete or concrete on steel deck, fireproofed.	Formed concrete, precast slabs, concrete or gypsum on steel deck, fireproofed.	Nonbearing curtain walls, masonry, concrete, metal and glass panels, stone, steel studs and masonry, tile or stucco, etc.
<b>B</b>	Reinforced concrete columns and beams. Fire-resistant construction.	Concrete or concrete on steel deck, fireproofed.	Formed concrete, precast slabs, concrete or gypsum on steel deck, fireproofed.	Nonbearing curtain walls, masonry, concrete, metal and glass panels, stone, steel studs and masonry, tile or stucco, etc.
<b>C</b>	Masonry or concrete load-bearing walls with or without pilasters. Masonry, concrete or curtain walls with full or partial open steel, wood, or concrete frame	Wood or concrete plank on wood or steel floor joists, or concrete slab on grade.	Wood or steel joists with wood or steel deck. Concrete plank.	Brick, concrete block, or tile masonry, tilt-up, formed concrete, nonbearing curtain walls.
<b>D</b>	Wood or steel studs in bearing wall, full or partial open wood or steel frame, primarily combustible construction.	Wood or steel floor joists or concrete slab on grade.	Wood or steel joists with wood or steel deck.	Almost any material except bearing or curtain walls of solid masonry or concrete. Generally combustible construction.
<b>S</b>	Metal bents, columns, girders, purlins and girts without fireproofing, incombustible construction.	Wood or steel deck on steel floor joists, or concrete slab on grade.	Steel or wood deck on steel joists.	Metal skin or sandwich panels. Generally incombustible.





# CALCULATOR METHOD

SECTION 15 PAGE 17  
November 2015

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	Good	38.75	3.60			

## Building Data

Use the **Building Data** screen to enter information about the total floor area, number or stories, perimeter or shape, effective age, typical life and depreciation for the building (or section):

General Info.		Occupancy		Building Data		Components		Addition/Bimks		Totals	
<div> <div>Section 1</div> <div>New</div> <div>Delete</div> <div> &lt;</div> <div>&lt;</div> <div>&gt;</div> <div>&gt; </div> </div>											
Total Floor Area:		<input type="text"/> Square Feet		Physical & Functional Depreciation:							
Number of Stories:		<div>Section: <input type="text"/></div> <div>Building: <input type="text"/></div>		<input checked="" type="radio"/> Marshall & Swift Tables							
				<input type="radio"/> Combined Physical & Functional		<input type="text"/> %					
				<input type="radio"/> Separate Physical		<input type="text"/> %					
				and Functional:		<input type="text"/> %					
Perimeter:		<input type="text"/> Feet		<input type="radio"/> Age/Life (Straight Line)							
OR Shape:		<input type="text"/>		<input type="radio"/> None							
Effective Age:		<input type="text"/> Years		Additional Functional Depreciation:		<input type="text"/> %					
Typical Life:				External Depreciation:		<input type="text"/> %					
<input checked="" type="radio"/> Marshall & Swift											
<input type="radio"/> Entered Value		<input type="text"/> Years									
Effective Age Adj:		<input type="text"/> Years									
Base Date:		<input type="text"/> mm/yyyy									

Commercial/Agricultural Estimator automatically displays values for the number of stories in the section, the shape and the effective age adjustment value.

The fields on this screen are:

- **Total Floor Area:** Finished area on all floors in the section based on the building's exterior dimensions. When calculating total floor area, do not include any of the following: Basements, mezzanines, balconies, unfinished attics, porches, decks, patios or garages. The total floor area is required—you must enter it in each section you define.
- **Number of Stories:** There are two fields for number of stories: the number of stories in the section of the building, and the total number of stories in the building. In many cases, these values will be the same. In such cases, you only need to enter the number of stories in the section—Commercial/Agricultural Estimator automatically sets the number of stories in the building to this value. For new estimates, Commercial/Agricultural Estimator automatically uses the default value set in the customization screens (one story if you have not changed the customization).
- **Perimeter or Shape:** Use these fields to enter one (but not both) of the following:
  - **Perimeter**, the total linear feet of wall that encloses the floor area, based on exterior dimensions.
  - **Shape**, using one of the following shapes:



1=Square  
2=Rectangular or Slightly Irregular



3=Irregular 4=Very Irregular

Whenever possible, it is best to enter the perimeter. For new estimates, Commercial/Agricultural Estimator automatically sets the shape to the default value set in the customization screens (shape 2 if you have not changed the customization).

If you enter a Perimeter when you have already entered a Shape, Commercial/Agricultural Estimator erases the shape (and vice versa).

- **Effective Age:** The effective age of a building is its age in years as compared with other buildings performing like functions. It is the actual age less any years that have been taken off by face-lifting, structural reconstruction, removal of functional inadequacies, etc.
- The entry of effective age is optional, except if you calculate the physical and functional depreciation using either of the following methods: Marshall & Swift Tables or Age/Life (Straight Line).
- **Typical Life:** Commercial/Agricultural Estimator uses Typical Life of the building when calculating physical and functional depreciation using either of the following methods: Marshall & Swift Tables or Age/Life (Straight Line). You can have Commercial/Agricultural Estimator automatically set Typical Life using the occupancy, class and rank of the section, or enter your own value for Typical Life.
- **Base Date:** Enter a date in this field to indicate when the data for this section was collected. Commercial/Agricultural Estimator uses this date when it adjusts the effective age from this base date to the report date. It also uses it to adjust any addition cost with the Trend option set, but which does not have its own Base Date.
- **Effective Age Adjustment Value:** Enter the number of years to adjust each effective age in the section for each year between the base date and the report date.
- **Depreciation Information:** The right side of the screen allows you to choose how to calculate physical and functional depreciation for the section (which applies to all building components not separately depreciated), and to enter percentages for additional functional and external depreciation.

# Building Data

# Commercial



Use the **Components** screen to enter building components to indicate the type of walls, heating & cooling, elevators, sprinklers, etc., in the section (or building):

**Data**

**Data**

- Exterior Walls
- Heating, Cooling and Ventilation (HVAC)
- Elevators
- Sprinklers
- Mezzanines
- Malls
- Miscellaneous Items (Fire Alarm Systems, Balconies)
- Custom Components
- Land and Site

Construction System:

- Exterior Walls
- HVAC/Heating**
- Elevators
- Spinklers
- Mezzanines
- Malls
- Miscellaneous
- Custom Components

Available Components:

- 601 Electric
- 602 Electric Wall
- 603 Forced Air Unit
- 604 Hot Water
- 605 Hot Water Radiant
- 606 Space Heater
- 607 Steam

Selected Components:

Type all or part of the name:

Buttons: Define, Add, Find

# Multipliers

MONTHLY GREEN  
SUPPLEMENT

## CURRENT COST MULTIPLIERS

SECTION 99 PAGE 3  
January 2017

These multipliers bring costs from preceding pages up to date. Also apply Local Multipliers, Section 98, Pages 5 through 10.

CALCULATOR COST SECTIONS										SEGREGATED COST SECTIONS									
(Effective Date of Cost Pages)		11	12	13	14	15	16	17	18	(Effective Date of Cost Pages)		41	42	43	44	45	46	47	48
		(11/16)	(8/16)	(5/16)	(2/16)	(11/15)	(8/15)	(5/15)	(2/15)			(12/16)	(9/16)	(6/16)	(3/16)	(12/15)	(9/15)	(6/15)	(3/15)
EASTERN	A	1.04	1.03	1.02	1.01	1.02	1.02	1.03	1.04	EASTERN	A	1.04	1.03	1.02	1.01	1.02	1.02	1.03	1.04
	B	1.05	1.05	1.02	1.04	1.02	1.03	1.04	1.06		B	1.05	1.05	1.02	1.04	1.02	1.03	1.04	1.06
	C	1.03	1.03	1.04	1.03	1.04	1.04	1.05	1.02		C	1.03	1.03	1.04	1.03	1.04	1.04	1.05	1.02
	D	1.02	1.03	1.03	1.04	1.02	1.02	1.02	1.02		D	1.02	1.03	1.03	1.01	1.02	1.02	1.02	1.02
	S	1.08	1.05	1.04	1.03	1.04	1.02	1.02	1.05		S	1.06	1.05	1.04	1.03	1.04	1.02	1.02	1.05
CENTRAL	A	0.99	0.97	0.97	0.97	0.97	0.98	0.97	0.97	CENTRAL	A	0.99	0.97	0.97	0.97	0.97	0.98	0.97	0.97
	B	0.99	0.99	0.99	0.98	1.00	0.98	0.98	0.98		B	0.99	0.99	0.98	0.98	1.00	0.98	0.98	0.98
	C	0.99	0.99	0.99	0.98	0.98	0.97	0.98	0.98		C	0.99	0.99	0.99	0.98	0.98	0.97	0.98	0.98
	D	0.98	0.99	0.98	0.98	1.00	1.00	0.97	0.99		D	0.98	0.99	0.99	0.99	1.00	1.00	0.97	0.99
	S	0.97	0.95	0.95	0.98	0.98	0.97	0.98	0.98		S	0.97	0.96	0.96	0.96	0.96	0.97	0.99	0.98
WESTERN	A	0.98	1.00	1.01	1.02	1.01	1.00	0.99	0.97	WESTERN	A	0.98	1.00	1.01	1.02	1.01	1.00	0.99	0.97
	B	0.98	0.99	1.02	1.01	1.01	1.02	1.02	0.99		B	0.98	0.99	1.02	1.01	1.01	1.02	1.02	0.99
	C	0.99	1.01	1.00	1.02	1.00	1.01	1.00	1.01		C	0.99	1.01	1.00	1.02	1.00	1.01	1.00	1.01
	D	1.01	1.00	1.00	1.02	0.99	0.99	1.02	1.01		D	1.01	1.00	1.00	1.02	0.99	0.99	1.02	1.01
	S	0.99	0.99	1.02	1.01	0.98	1.02	1.01	0.98		S	0.99	0.99	1.02	1.01	0.99	1.02	1.01	0.98

## UNIT-IN-PLACE COST SECTIONS (51 - 70)

Sec. Page	Date	Eastern	Central	Western	Sec. Page	Date	Eastern	Central	Western		
51 - 2-3	(8/15)	Concrete Foundations.....	1.04	1.00	1.01	61 - 1-8	(12/16)	Tanks.....	1.01	0.99	1.01
51 - 4	(3/15)	Pillings.....	1.03	0.99	1.01	62 - 1	(6/16)	Industrial Pumps & Boilers.....	1.04	0.95	1.04
51 - 7-8	(3/15)	Steel and Concrete Frame.....	1.04	0.99	1.01	62 - 2,3, 8	(6/16)	Piping.....	1.04	0.95	1.04
51 - 3-7	(3/15)	Wood Foundations, Frame.....	1.01	0.99	1.02	62 - 4	(6/16)	Electrical Motors.....	1.04	0.95	1.04
52 - 1-4, 6	(3/15)	Interior Construction.....	1.02	1.00	1.01	62 - 5	(6/16)	Steel Stacks, Chutes.....	1.04	0.95	1.04
52 - 5	(3/15)	Bank Vaults and Equipment.....	1.04	0.99	1.00	62 - 5	(6/16)	Masonry & Concrete Chimneys.....	1.01	0.97	1.03
53 - 1-8	(6/15)	Heating, Cooling & Ventilating.....	1.02	0.99	1.02	62 - 6	(6/16)	Compressors, Incinerators.....	1.04	0.96	1.04
53 - 9-12	(6/15)	Plumbing, Fire Protection, etc.....	1.03	0.97	1.01	63 - 1-4	(6/16)	Trailer and Mfg. Housing Parks.....	1.00	0.99	1.03
54 - 1-6	(6/15)	Electrical, Security.....	1.00	1.01	0.99	63 - 5-10	(6/16)	Manufactured Housing.....	1.01	1.00	1.02
55 - 3-7	(6/15)	Wall Coats.....	1.01	0.99	1.02	64 - 1-6	(3/16)	Service Stations, Car Washes.....	1.04	0.99	1.00
56 - 1-2	(6/15)	Stained Glass.....	1.01	0.99	1.02	64 - 7-9	(3/16)	Prefabricated Metal Structures.....	1.03	0.98	1.02
56 - 3-6	(6/15)	Storefronts.....	1.01	0.99	1.02	64 - 7-9	(3/16)	Prefab. Wood & Air Structures.....	1.01	0.99	1.01
56 - 7	(6/15)	Stonework.....	1.01	1.00	1.02	65 - 1-12	(3/16)	Equipment Costs.....	1.01	1.00	1.00
56 - 8	(6/16)	Columns, Stone & Concrete.....	1.01	1.00	1.02	66 - 1	(12/15)	Subdivision Costs.....	1.01	0.99	1.02
56 - 8	(6/16)	Columns, Wood & Aluminum.....	1.01	0.98	1.01	66 - 2-8	(12/15)	Yard Improvements.....	1.01	0.98	1.03
57 - 1-8	(6/15)	Roofs.....	1.01	0.99	1.01	66 - 10-11	(12/15)	Demolition & Remediation.....	1.00	0.99	1.02
58 - 1	(6/15)	Cold Storage.....	1.01	0.98	1.02	67 - 1-2	(12/15)	Golf Courses.....	1.00	1.00	1.01
58 - 2-3	(6/15)	Elevators, Conveying Systems.....	1.02	0.98	1.01	67 - 3-7	(12/15)	Recreational Facilities.....	1.00	0.99	1.02
					70 - 1-20	(1/17)	Green Section.....	1.00	0.99	1.02	

5/20/16 ALL 1/4/16 (1/16) 5/20/16

The data included on this page becomes obsolete after update delivery, scheduled for February 2017.

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42/017

## LOCAL MULTIPLIERS

It up-to-date from preceding pages. Do not apply to Section 98 or any other indexes.

### UNITED STATES

CLASS	A	B	C	D	S	CLASS	A	B	C	D	S
MICHIGAN	1.05	1.05	1.04	1.04	1.05	MISSOURI	1.01	1.01	1.02	1.02	1.01
Adrian	1.06	1.06	1.06	1.06	1.07	Cape Girardeau	0.93	0.91	0.93	0.92	0.91
Alpena	1.03	1.01	1.00	0.98	1.02	Columbia	1.07	1.05	1.03	1.03	1.07
Ann Arbor	1.11	1.11	1.11	1.11	1.13	Independence	1.08	1.08	1.10	1.10	1.09
Battle Creek	1.03	1.03	1.03	1.01	1.02	Jefferson City	1.00	0.98	0.98	1.01	0.99
Bay City	1.08	1.05	1.03	1.03	1.07	Joplin	0.93	0.91	0.93	0.92	0.94
Detroit	1.10	1.11	1.12	1.13	1.12	Kansas City	1.09	1.10	1.10	1.11	1.10
Escanaba	0.97	0.97	0.98	0.97	0.97	Rolla	0.90	0.90	0.91	0.90	0.88
Flint	1.09	1.09	1.07	1.05	1.09	Springfield	1.02	1.00	1.02	1.01	1.03
Grand Rapids	1.01	0.99	1.00	0.99	0.99	St. Joseph	1.03	1.06	1.04	1.05	1.03
Ishpeming	0.98	0.98	1.00	0.98	0.99	St. Louis	1.08	1.08	1.11	1.11	1.09
Jackson	1.06	1.05	1.05	1.04	1.06	MONTANA	0.95	0.94	0.96	0.94	0.96
Kalamazoo	1.05	1.04	1.04	1.03	1.04	Billings	0.97	0.94	0.99	0.96	0.97
Lansing	1.04	1.04	1.02	1.01	1.03	Bozeman	0.98	0.95	0.96	0.96	0.98
Marquette	0.98	0.98	1.00	0.98	0.99	Butte	0.95	0.94	0.97	0.94	0.96
Monroe	1.08	1.07	1.07	1.07	1.09	Great Falls	0.95	0.95	0.95	0.92	0.97
Muskegon	1.01	1.01	1.01	1.00	1.00	Helena	0.92	0.91	0.95	0.94	0.94
Niles	1.05	1.04	1.05	1.04	1.05	Lewistown	0.93	0.91	0.93	0.93	0.92
Pontiac	1.11	1.11	1.11	1.11	1.12	Missoula	0.97	0.96	0.97	0.95	0.98
Port Huron	1.06	1.08	1.07	1.09	1.08	NEBRASKA	0.96	0.95	0.95	0.94	0.95
Saginaw	1.05	1.03	1.01	1.01	1.04	Grand Island	0.92	0.91	0.92	0.93	0.92
Sault Ste. Marie	1.00	1.00	0.99	0.98	1.00	Lincoln	0.96	0.94	0.92	0.91	0.94
Traverse City	1.00	1.01	1.01	0.99	1.01	Norfolk	0.98	0.97	0.99	0.98	0.98
Ypsilanti	1.11	1.11	1.11	1.11	1.13	North Platte	0.97	0.96	0.98	0.97	0.96
MINNESOTA	1.10	1.09	1.08	1.07	1.10	Omaha	0.95	0.95	0.94	0.93	0.95
Austin	1.07	1.07	1.05	1.05	1.08	NEVADA	1.11	1.08	1.08	1.08	1.11
Beauregard	1.08	1.06	1.07	1.05	1.07	Carson City	1.09	1.06	1.06	1.06	1.10
Duluth	1.11	1.10	1.10	1.07	1.10	Elko	1.12	1.11	1.10	1.09	1.12
Hibbing	1.09	1.07	1.06	1.02	1.08	Fallon	1.02	0.98	1.00	0.99	1.02
Marikab	1.07	1.06	1.07	1.05	1.09	Las Vegas	1.13	1.10	1.11	1.13	1.13
Minneapolis	1.14	1.15	1.14	1.14	1.15	Lincoln County	1.02	1.01	1.04	1.04	1.02
Moorhead	1.08	1.05	1.03	1.01	1.07	Nye County	0.95	0.92	0.91	0.88	0.95
Rochester	1.10	1.09	1.07	1.05	1.11	Reno	1.11	1.08	1.05	1.04	1.10
St. Cloud	1.07	1.06	1.06	1.07	1.09	Sparks	1.11	1.08	1.06	1.04	1.10
St. Paul	1.15	1.15	1.14	1.15	1.15	Tahoe Area	1.21	1.19	1.21	1.21	1.22
ARIZONA	0.98	0.98	0.98	0.98	0.97						

Location

Commercial

Time

Estimate Number : 56  
 Parcel Number :  
 Property Address :  
 Property City :  
 State/Province : NV  
 Zip/Postal Code :

### Section 1

#### Occupancy

	Class	Height	Rank
67% Industrial Flex Building	Metal frame and walls	19.00	1.5
33% Convenience Market	Metal frame and walls	19.00	1.5
Total Area	: 10,080		
Number of Stories (Section)	: 1.00		
Parameter	: 424		

#### Components

	Units/%	Other
Exterior Walls:		
Single-Metal on Steel Frame	90%	
Concrete Block, Textured Face	10%	
HVAC (Heating):		
Space Heater	58%	Climate : 2
Package Unit	42%	Climate : 2
Sprinklers:		
Sprinklers	100%	

Cost as of 01/2017

	Units/%	Cost	Total
Basic Structure			
Base Cost	10,080	47.29	476,683
Exterior Walls	10,080	7.29	73,463
Heating & Cooling	10,080	5.84	58,838
Sprinklers	10,080	3.19	32,155
Basic Structure Cost	10,080	63.61	641,139



1 Story



1 ½ Story



2 story Bi-level



Split Level



2 Story



????



# Residence Types

**One-story** - Finished living area on one floor. Style available for all types.

**Two-story**- Finished living area on two floors. Area of each floor is approximately the same. Style available for all types.

**Three-story**- Finished living area on three floors. Area of each floor is approximately the same. Style available for single-family res and low-rise multiples only.

**Apply to All**-Roof structure has medium slope, limited attic space that is not intended for living area.

**Bi-level**- Two levels of living area. Unlike a conventional two-story res, lower level is partially unfinished. In addition, lower level normally partially below grade & does not have basement below it. Distinguishing characteristic of bi-level is split-foyer entry. Bi-levels sometimes called raised ranch, split foyer or split entry. Res Estimator has 2 different bi-level styles. Standard bi-level, enter the area on upper level for total floor area. For bi-level (total area), enter area on both levels for total floor area. Styles available for single-family res only.

**Note:** Bi-levels with no finish on the lower level, use one story style with a basement (added using the basement components). Bi-levels with completely finished lower level, use two story style.

# Residence Types

**1½ story, finished**- Two levels of finished living area. Since the top floor is finished, enter the total area for both floors for total floor area. Style is available for single-family res & town houses only. *Often recognized by sloped roof and dormer windows*



**Unfinished**- since the top level is unfinished, enter the area for the ground floor only for the total floor area. This style is available for single-family res only.

**2½ story, finished**- Three levels of finished living area. Since the top floor is finished, enter the total area for all three floors for total floor area. Style is available for single-family res & town houses only.

**Unfinished**- since the top floor is unfinished, enter the area for the first two floors only for total floor area. This style is available for single-family res only.

**3-1/2 story, finished**- Four levels of finished living area. Since the fourth floor is finished, enter the total area for all four floors for the total floor area. Style is available for single-family res only.

**Unfinished**- since the fourth floor is unfinished, enter the area for the first three floors only for total floor area. This style is available for single-family res only.

**Apply to all**- Characterized by a steep roof slope (8 to 12 or greater) and dormers. Because of roof design, area of the top floor is usually 40% to 60% of floor area below it.

???????



What Residence Type is this???

## RESIDENCE

## STUD FRAMED

Total Area	Plywood or Hardboard	Metal or Vinyl Siding	Stucco	Wood Siding	Wood Shingles	Synth. Plaster (EIFS)
600	85.86	85.97	87.42	86.67	87.72	89.95
700	83.41	83.52	84.89	84.18	85.18	87.29
800	81.35	81.44	82.76	82.08	83.04	85.06
900	79.57	79.66	80.93	80.27	81.19	83.13
1000	78.01	78.10	79.32	78.68	79.57	81.44
1100	76.62	76.71	77.89	77.28	78.14	79.95
1200	75.38	75.47	76.61	76.02	76.85	78.61
1300	74.25	74.34	75.45	74.87	75.68	77.39
1400	73.23	73.31	74.39	73.83	74.62	76.29
1500	72.29	72.37	73.42	72.87	73.64	75.27
1600	71.41	71.49	72.53	71.99	72.74	74.33
1700	70.61	70.68	71.69	71.17	71.90	73.48
1800	69.85	69.93	70.92	70.40	71.12	72.65
2000	68.48	68.55	69.51	69.01	69.71	71.17
2200	67.27	67.34	68.26	67.78	68.45	69.87
2400	66.18	66.24	67.14	66.67	67.32	68.69
2600	65.19	65.25	66.12	65.67	66.30	67.63
2800	64.29	64.35	65.19	64.78	65.37	66.66
3000	63.46	63.52	64.34	63.92	64.51	65.78

## STUD FRAMED

## MASONRY

Total Area	Rustic Log	Masonry Veneer	Concrete Block	Stucco on Block	Common Brick	Poured Concrete (SIP Forming)
600	94.17	94.52	90.85	93.47	104.99	99.47
700	91.28	91.62	88.17	90.65	101.39	96.18
800	88.85	89.18	85.91	88.27	98.36	93.41
900	86.77	87.08	83.97	86.23	95.77	91.03
1000	84.95	85.24	82.27	84.44	93.51	88.96
1100	83.33	83.61	80.76	82.85	91.51	87.12
1200	81.88	82.15	79.41	81.43	89.72	85.48
1300	80.57	80.83	78.18	80.15	88.11	84.00
1400	79.37	79.63	77.06	78.97	86.64	82.65
1500	78.27	78.53	76.04	77.90	85.30	81.41
1600	77.26	77.51	75.09	76.90	84.06	80.27
1700	76.32	76.57	74.21	75.98	82.91	79.21
1800	75.45	75.69	73.39	75.12	81.84	78.23
2000	73.85	74.09	71.91	73.56	79.91	76.45
2200	72.45	72.67	70.59	72.18	78.20	74.87
2400	71.19	71.41	69.41	70.94	76.68	73.46
2600	70.05	70.26	68.34	69.82	75.30	72.18
2800	69.01	69.21	67.36	68.80	74.04	71.02
3000	68.06	68.26	66.46	67.86	72.90	69.96

## SQUARE FOOT ADJUSTMENTS

## ROOFING:

Composition shingle or

Built-up, small rock ...

Clay tile ...

Concrete tile ...

Metal, preformed ...

Wood shake ...

Wood shingle ...

Composition roll ...

(base)

\$6.95

4.65

1.23

2.34

2.04

.96

ENERGY ADJ: Mod. Climate

(base)

Mild climate

- \$1.35

Extreme climate

+ 2.19

Superinsulated

+ 4.29

FOUNDATION ADJ: Mod. Climate

(base)

Mild climate

- \$2.71

Extreme climate

+ 4.97

Hillside, moderate slope

+ 2.24

Hillside, steep slope

+ 7.21

Add for SEISMIC ZONES (Z)/HURRICANE (Wind) ADJ.: See Intro-9; maps, D-12

Frame (Z2) +\$1.94, (Z3-4/wind) +\$3.05 Masonry (Z2) +\$1.76, (Z3-4/wind) +\$2.60

See Pages Fair-19 — Fair-22 for other Sq. Ft. Adjustments, Basements, Porches, Garages, etc.

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The data included on this page becomes obsolete after update delivery, scheduled for June 2017. page Fair-13



## Components Screen

Estimate 1: NCC-1701

General Information | Building Data | **Components** | Additions/Remarks | Totals

Section: Main

Systems: Exterior Walls, Roofing, Heating/Cooling, Floor Cover, Appliances, Miscellaneous, Garage/Carport, Basement, Porch/Deck, Balcony/Stairway, Yard Improvements

Available Components:

- 101 - Frame, Hardboard Sheets
- 103 - Frame, Plywood
- 105 - Frame, Siding
- 106 - Frame, Siding, Metal
- 107 - Frame, Siding, Vinyl
- 108 - Frame, Siding, Wood
- 109 - Frame, Stucco
- 111 - Frame, Synthetic Plaster (EIFS)
- 112 - Frame, Wood Shake
- 114 - Frame, Wood Shingle
- 118 - Frame, Cement Fiber Siding

Size: 2,000 Square Feet  
Quality: 3.00, Average  
Physical Depreciation: 0.0 %

New Delete Edit

Selected Components:

Code	System	Description	Units	%	Qual	Quality Desc.	Dep. %	Age	Life
602	Miscellaneous	Plumbing Rough-ins (#)	1						
622	Miscellaneous	Raised Subfloor (% of SF)		100					
641	Miscellaneous	Single 1-Story Fireplace (#)	1						
701	Garage/Carport	Attached Garage (SF)	560						
691	Land/Size	Land Value (\$)	65000						
692	Land/Size	Site Improvements, Depreciat	9800						

Add Delete

Details

Details

The **Components** screen is for the entry of building components for the construction systems listed under Systems in the upper portion of the screen (Exterior Walls, Roofing, Heating/Cooling, etc.).

For new estimates, Residential Estimator automatically displays any components selected on the [Component Assumptions](#) screen. Use the **Components** screen to add, change or delete any components.

### Component Grid

The component grid at the bottom of the **Components** screen allows you to enter components for a section, and displays the components you have entered:

Code	System	Description	Units	%	Qual	Quality Desc.	Dep. %	Age	Life
206	Roofing	Comp. Shingle or Built-up Roc		100					
309	Heating/Cooling	Forced Air Furnace		100					
601	Miscellaneous	Plumbing Fixtures (#)	8						
602	Miscellaneous	Plumbing Rough-ins (#)	1						
502	Appliances	Automatic Appliance Allowanc							
402	Floor Cover	Automatic Floor Cover Allowa							
622	Miscellaneous	Raised Subfloor (% of SF)		100					

## Cost Adjustments Screen (Site-Built Housing)

Defaults		Defaults	
Local Multiplier:	1.14	Energy Adjustment:	Use Default Mild
Local Multiplier Adjustment (%):	0.0	Foundation Adj.:	Use Default Mild
Architect's Fee (%):	1.3	Hillside Adjustment:	Flat Flat
Rounding Value (\$):	0	Seismic Adjustment:	No Adjustment No Adjustment
Report Date (mm/yyyy):	/ 09/2000	Wind Adjustment:	No Adjustment No Adjustment
Single Line Backdate (mm/yyyy):	/	Type Name:	
Base Date (mm/yyyy):	09/2000	Story Height:	8.000
Effective Age Adjustment Value:	0.0		
Depreciation % Adjustment Value:	0.0		

Close

The **Cost Adjustments** screen contains optional fields that adjust the calculated costs or add additional items to the report. This screen displays when you click the **Cost Adjustments** button on the **Totals** screen.

To enter information, click in the desired field (or press the **Tab** key until the field is highlighted), then type the desired information. For the adjustments on the right side of the screen, click the button to display the options, then click on the desired option (or press the **Tab** key until the field is highlighted, press the **Down Arrow** or **Up Arrow** key until the desired option is highlighted, then press **Enter**).

The values displayed in the "Defaults" column are the values that Residential Estimator will use when calculating the costs if you do not enter a value for that item.

The items on this screen are:

- **Local Multiplier:** Enter a value if you do not want to use the default local multiplier (from the *Residential Cost Handbook*, based on ZIP/Postal Code).
- **Local Multiplier Adjustment (%):** Enter a value if you want to increase or decrease the costs for unusual situations, such as remote locations, resort locations, shortages, surpluses, etc. In such instances, enter the percentage you want to increase or decrease costs for the local multiplier adjustment %.  
Click this button for guidelines on using the Local Multiplier Adjustment for unusual conditions.
- **Architect's Fee (%):** Enter a value if you do not want to use the default architect's fee % (from Section D of the *Residential Cost Handbook*, based on type and quality).
- **Rounding Value (\$):** Enter a value to print an additional line in the report with the final cost rounded to the dollar amount entered.

- **Report Date (mm/yyyy):** Enter a value only if you want the costs in the report to be calculated for a previous date (with October 1975 the earliest available date). Use this field only if you want to set the report date for selected estimates to a date other than the cost date (such as when doing an appraisal for a divorce or estate where a specific valuation date is required). If you need the report date for all estimates set to a specific date (such as in assessment work), set the default date using the **Calculations** tab in the **Customization** option of the **Tools** menu.
- **Single Line Backdate Date (mm/yyyy):** Enter a value only if you want to print an additional line in the report with the final cost trended back to a previous date (with October 1975 the available date).
- **Base Date (mm/yyyy):** This is a required field that sets the month and year of all effective ages and physical and/or physical+functional depreciation percentages in the estimate (with October 1975 the available date). It also sets the date of the costs for additions with the **Trend** option set but that do not have their own Base Dates. See the *Worksheet Reference* for further details.
- **Effective Age Adjustment Value:** The number of years to adjust each effective age in the estimate for each year between the Base Date and the Report Date.
- **Depreciation Percentage Adjustment Value:** The percentage to adjust each physical and/or physical+functional depreciation percentage in the estimate for each year between the Base Date and the Report Date.
- **Energy Adjustment:** Select one of the climate zones to adjust the costs for items that affect energy conservation (i.e., insulation, framing and window glazing), or select the "Use Default" option to use the default listed in the "Defaults" column.
- **Foundation Adjustment:** Select one of the climate zones to adjust the foundation depth of the residence, or select the "Use Default" option to use the default listed to the right of this drop-down list box.
- **Hillside Adjustment:** Select one of the options here to adjust the cost for hillside construction if the residence is built on a hillside.
- **Seismic Adjustment:** Select one of the options here if you want to adjust the cost for the additional construction needed to meet seismic building code requirements. For frame homes, this includes the additional cost of structurally upgrading the sheathing, bracing and roof ties and of increased reinforcement in the foundation. For masonry homes, this includes the additional reinforcement cost for the exterior wall and foundation, as well as the additional costs for roof ties and any other miscellaneous structural upgrading. If you do not want to adjust the cost for seismic construction, select "No Adjustment."
- **Wind Adjustment:** Select "Wind Adjustment" to adjust the cost for the additional construction to meet high wind building code requirements. Select "No Adjustment" if you do not want to adjust for wind.
- **Type Name:** Enter a type name only if you want the report to have something other than the residence type you selected on the Building Data screen. For example, if a Single-Family Residence has been converted to a Restaurant, enter Restaurant for the type name.
- **Story Height:** Enter a story height only if it differs from the default height displayed to the right. The story height is the average height per floor. For example, for a two-story house with a 10' high first floor and an 8' high second floor, enter 9 for the story height.

You can also define values to use for new estimates for most of the fields on this screen. For example, you can set the base date for all estimates to a given date in the past. Whenever you create a new estimate, Residential Estimator automatically displays these default values in the appropriate fields.

# Residential



## QUARTERLY MULTIPLIERS

DECEMBER 2016

The Current Cost and Local Multipliers should be used to trend the costs published on the preceding pages to a current date and to adjust the costs by location. This section is republished quarterly and is based on two Marshall & Swift building cost indexes from three districts as published in the Marshall Valuation Service. Other conditional adjustments are found on Page F-11. Comparative Cost Multipliers, for residential construction, are found on Pages F-12 through F-18.

### CURRENT COST MULTIPLIERS

Use the following Current Cost Multipliers by district (see map below) to trend the costs on the preceding cost pages to a current level.

PAGES	PUB. DATE	EASTERN		CENTRAL		WESTERN	
		FRAME	MASONRY	FRAME	MASONRY	FRAME	MASONRY
SECTION A							
Low, Fair & Avg (Single-Fam. Detached Houses)	12/15	1.00	1.02	1.00	0.98	1.03	1.00
Good, VG & Exc (Single-Fam. Detached Houses)	12/15	1.00	1.02	1.00	0.98	1.03	1.00
Mltg-1 to Mltg-28 (Mobile/Htg. Housing)	12/16	0.88	-----	1.00	-----	1.03	-----
Mul-3 to Mul-19 (Multiple Residences)	3/16	1.03	1.02	1.00	0.98	1.00	1.02
Mul-21 to Mul-37 (Town Houses & Duplexes)	3/16	1.02	1.02	1.00	0.98	1.01	1.03
Mul-38 to Mul-49 (Urban Row Houses)	3/16	1.02	1.02	1.00	0.98	1.01	1.02
Spec-1 to Spec-11 (Special Studies)	6/16	1.02	1.01	0.99	1.01	1.02	1.00
Spec-12 to Spec-39 (Special Studies)	6/16	1.02	1.01	0.99	1.00	1.02	1.00
SECTION B							
B-1 to B-28 (Segregated Costs)	9/15	1.02	1.02	1.02	1.00	1.00	0.99
SECTION C							
C-1 to C-17 (Yard Improvement Costs)	9/16	EASTERN 1.00		CENTRAL 0.97		WESTERN 1.06	
C-18 to C-36 (Unit-in-place Costs)	9/16	1.00		0.97		1.06	
Green-1 to Green-57 (Green Section)	3/16	1.01		0.99		1.02	

# Multipliers

## LOCAL MULTIPLIERS

### NEVADA

Carson City	1.06
Elko	1.08
Fallon	0.99
Las Vegas	1.13
Lincoln County	1.04
Nye County	0.88
Reno	1.04
Sparks	1.04
Tahoe Area	1.22

Frame

Masonry

1.08
1.07
1.10
1.00
1.11
1.04
0.91
1.05
1.08
1.22

### NEW MEXICO (Co

Roswell	
Santa Fe	
Taos	

### NEW YORK

Albany	
Amsterdam	
Auburn	

# Residential

# Time

# Location

# Standard Report

Estimate ID:  
Address:  
City:  
ZIP/Postal Code:  
User Defined 1:

Single-family Residence  
Effective Age: 0  
Cost as of: December, 2016  
Style: One Story  
Exterior Wall: Frame, Siding 100%  
Plumbing Fixtures: 8

Floor Area: 1,330 Square Feet  
Quality: 2 Fair  
Condition: 3 Average

	Units	Cost	Total
Base Cost	1,330	62.87	83,617
Plumbing Fixtures	8	1,155.60	9,245
Composition Shingle	1,330	2.35	3,126
Raised Subfloor	1,330	8.25	10,973
Floor Cover Allowance	1,330	2.94	3,910
Forced Air Furnace	1,330	3.66	4,868
Plumbing Rough-ins	1	518.95	519
Single 1-Story Fireplace	1	3,236.75	3,237
Appliance Allowance	1	2,097.20	2,097
<b>Base Structure Total Cost</b>	<b>1,330</b>	<b>91.42</b>	<b>121,592</b>
Open Slab Porch	258	6.24	1,610
<b>Subtotal Extras</b>			<b>1,610</b>
<b>Replacement Cost New</b>	<b>1,330</b>	<b>92.63</b>	<b>123,202</b>
<b>Total Depreciated Cost</b>			<b>123,202</b>
Wood Fence, Picket	108	5.61	606
<b>Subtotal Yard Improvements</b>			<b>606</b>
<b>Non Building</b>			<b>606</b>
<b>Total</b>			<b>123,808</b>

Cost data by Marshall & Swift/Bosch, LLC and its licensors.

Remarks

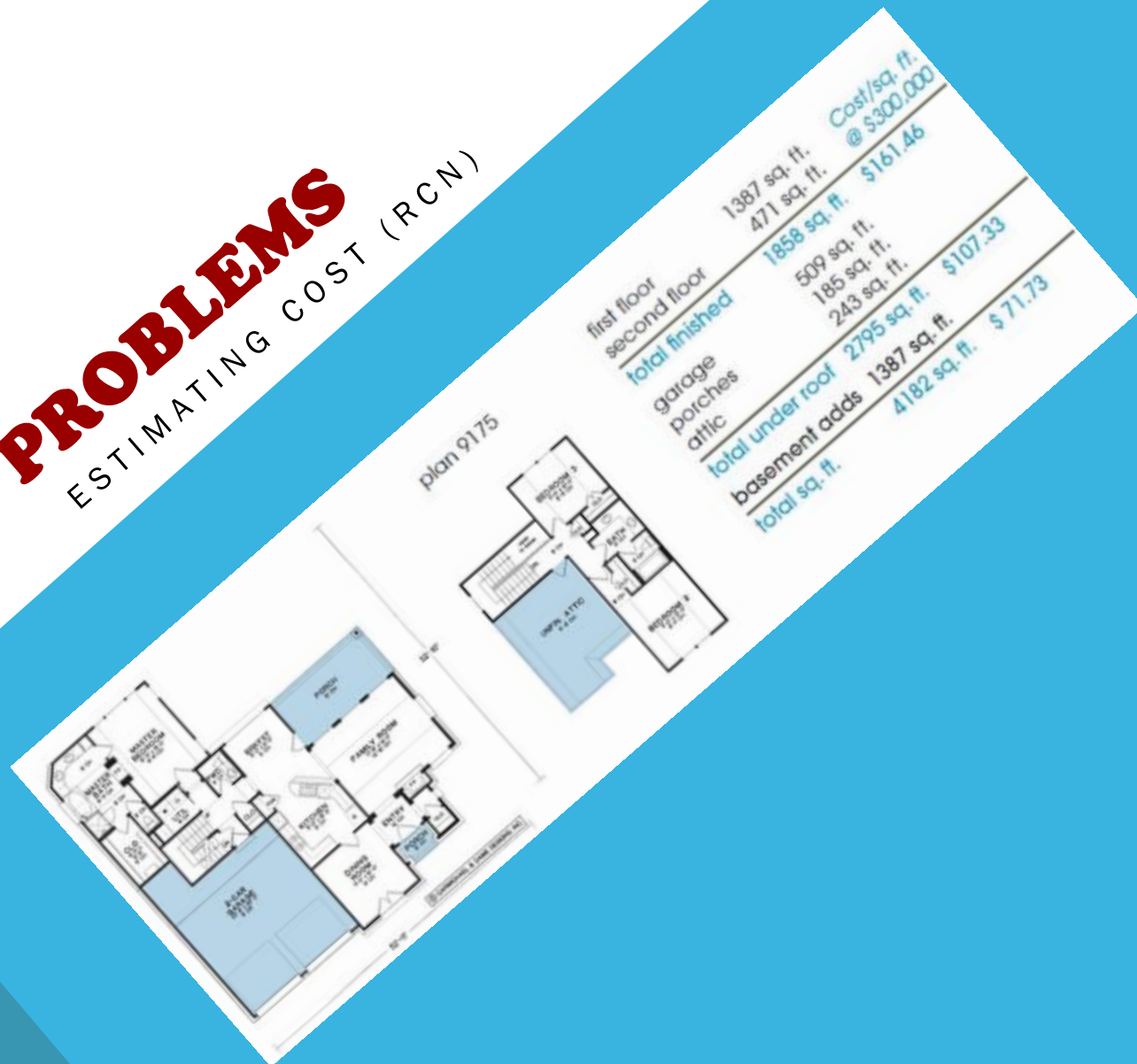
**Were you paying attention??!**



<https://www.surveymonkey.com/r/KPSLC33>

# PROBLEMS

## ESTIMATING COST (RCN)



# Factored Historical Cost

You are appraising a 25-year old house using the cost approach. The cost of the house at the time it was built was \$95,000. The house currently has an effective age of 20 and the current cost index is 1.45. The base cost index of 1.00 is from 30 years ago. The cost index for 20 years ago is 1.15 and the cost index for 25 years is 1.10. What is the factored historical cost (RCN)?

**Now / Then = Multiplier**

$$1.45 / 1.10 = 1.32$$

**Historical Cost \* Multiplier = RCN**

$$1.32 * 95,000 = 125,400$$

# Square foot cost

Using the comparative unit or square foot cost method, what is the cost per square foot for this structure if the total cost was \$90,220?

$$A = 18 * 36 = 648$$

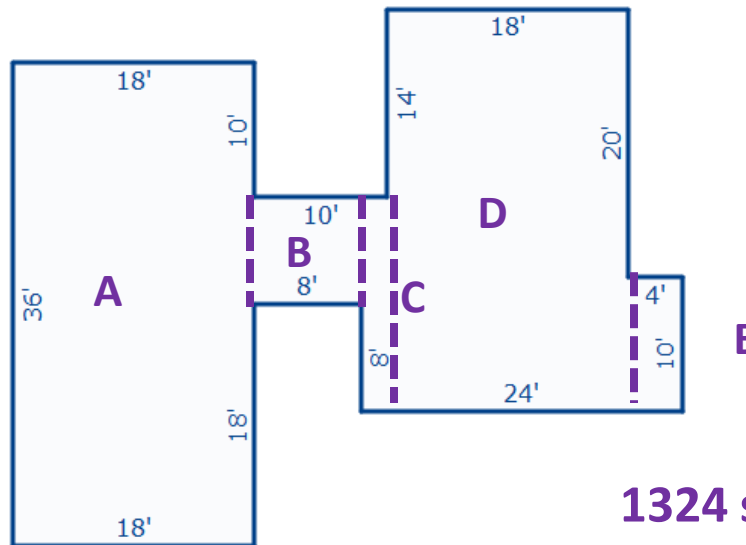
$$B = 8 * 8 = 64$$

$$C = 2 * 16 = 32$$

$$D = 18 * 30 = 540$$

$$E = 4 * 10 = \underline{40}$$

$$\text{Total sq ft } 1,324$$



1324 sq ft (per Apex)

$$90,220 / 1324 =$$

\$68.14 per sq ft



## Square foot cost – M&S

Using the following cost information from M&S, calculate the RCN for each of the following gross living areas.

#1	1250
#2	1275
#3	1325
#4	1350

Two-Story	
sq ft	\$ per sq ft
1200	\$80.00
1300	\$84.00
1400	\$88.00
CCM	1.01
LCM	1.05

$$\text{\#1 } 50/100 * (84 - 80) = 2 + 80 = 82 * 1250 = 102,500 * 1.01 * 1.05 = 108,701$$

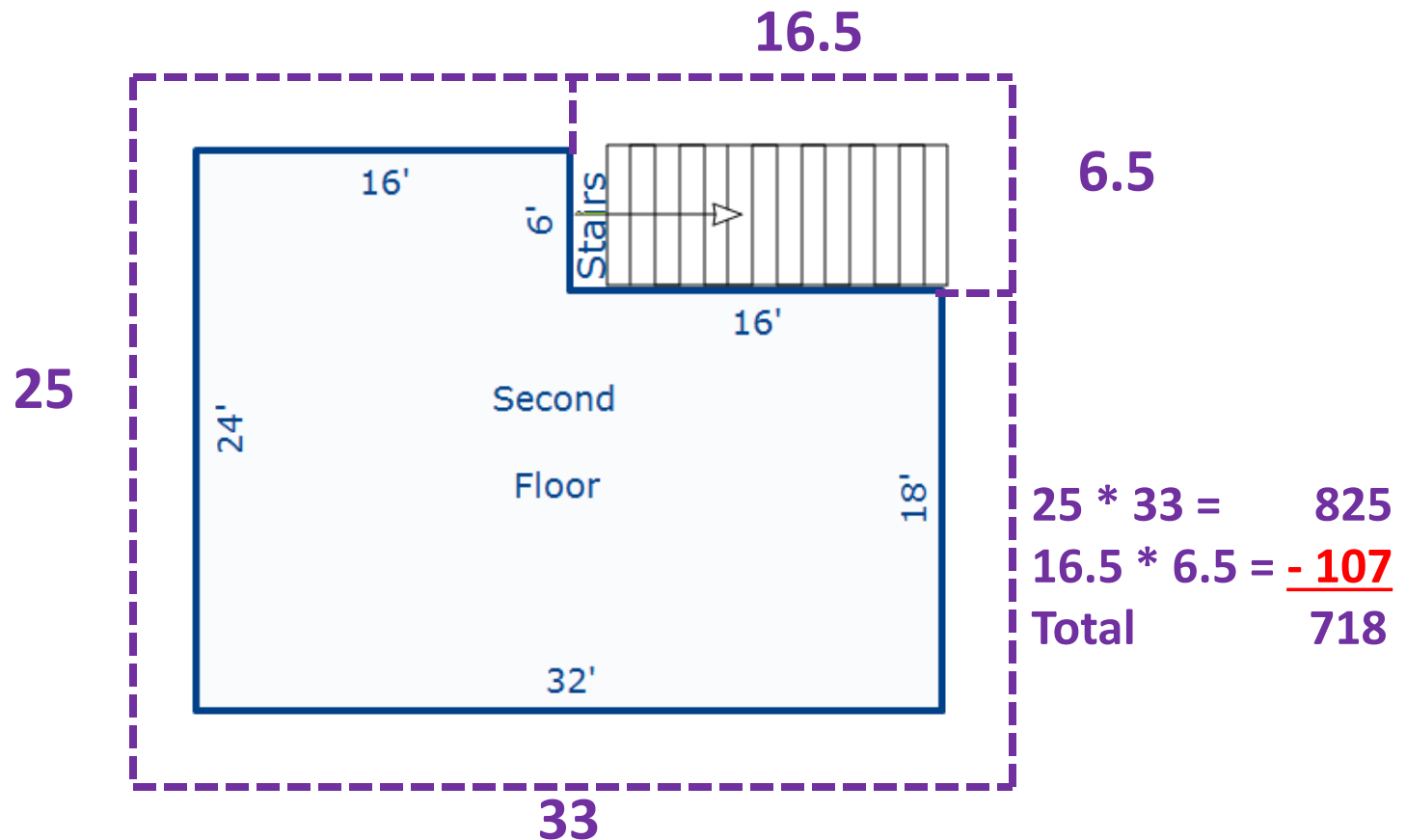
$$\text{\#2 } 75/100 * (84 - 80) = 3 + 80 = 83 * 1275 = 105,825 * 1.01 * 1.05 = 112,227$$

$$\text{\#3 } 25/100 * (88 - 84) = 1 + 84 = 85 * 1325 = 112,625 * 1.01 * 1.05 = 119,439$$

$$\text{\#4 } 50/100 * (88 - 84) = 2 + 84 = 86 * 1350 = 116,100 * 1.01 * 1.05 = 123,124$$

# Square foot calculations

You have taken the interior measurements of the second floor of a two story residence as shown below. If the walls are 6" thick, what is the sq. ft. of the second floor?



# M & S Cost calculations

What is the cost of a 5000 sq ft frame stucco office building of average quality using the following Marshall & Swift costs?

OFFICE BUILDINGS (344)	
CLASS	Sq. Ft.
A	\$153.08
B	\$147.05
C	\$105.46
D	\$100.01
S	\$91.83
CCM	1.01
LCM	1.05

$$5000 * 100.01 * 1.01 * 1.05 = 530,303$$

# M & S Cost calculations

What is the cost of a 12000 sq ft office building with reinforced concrete and fire resistant construction?

OFFICE BUILDINGS (344)	
CLASS	Sq. Ft.
A	\$153.08
B	\$147.05
C	\$105.46
D	\$100.01
S	\$91.83
CCM	1.01
LCM	1.05

$$12000 * 147.05 * 1.01 * 1.05 = 1,871,358$$

## Cost per NRS/NAC

Based on the following information:

Reproduction cost = \$160,000

Replacement cost = \$140,000

Adjusted actual age 15

Effective age 12

What is the RCNLD under Nevada law?

RCN =	140,000
-------	---------

Dep = $15 * 1.5\% * 140,000 =$	<u>-31,500</u>
--------------------------------	----------------

RCNLD = $140,000 - 31,500 =$	108,500
------------------------------	---------

## Adjusted actual age - cost

Original residence is 1400 square feet built 12 years ago. RCN is \$112,000. Addition added 2 years ago with an RCN of \$20,000.

Is an adjusted actual age calculation required? **YES (>10% of total)**

If so, what is the adjusted actual age under Nevada law *using cost*? **10.49 rounded to 10**

If the addition cost \$12,000, what would be your answer based on cost? **NO (<10% of total)**

$$112,000/132,000 = .8485 * 12 = 10.182$$

$$20,000/132,000 = \underline{.1515} * 2 = \underline{.303}$$

$$\text{Adj. Actual Age} \quad 1.0000 \quad 10.49 \text{ or } 10 \text{ years}$$

## Adjusted actual age – sq ft

Original residence is 1400 square feet built 12 years ago.  
Addition added 2 years ago of 200 square feet.

Is an adjusted actual age calculation required? **YES (>10% of total)**

If so, what is the adjusted actual age under Nevada law?

**10.55 rounded to 11**

If the addition was 140 square feet, what would be your answer? **NO (<10% of total)**

$$1400/1600 = .8750 * 12 = 10.50$$

$$200/1600 = \underline{.1250} * 2 = \underline{.25}$$

$$\text{Adj. Actual Age } 1.0000 \quad 10.75 \text{ or } 11 \text{ years}$$

# Factored historical cost

The historical cost of a residence was \$120,000 and the index at that time was 1.08. If the current cost is \$150,000, what is the multiplier? What is the current index?

*Reminder: Current / Prior = Multiplier*

*And Multiplier \* Prior = Current*

$$150,000 / 120,000 = 1.25$$

$$1.25 * 1.08 = 1.35$$

Current index is 1.35